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CHARDONOL DIV. FREEMAN CHEMIC* TXD108999863
HOUSTON TX RC NT VOL 01

478A.TXD108999863 0001
COOK COMPOSITES & POLYMERS
HOUSTON, TX 77061



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DATA CHANGES

LPA IDENTIFICATION NUMBER/C101-12												TWC #/C116-6				PREPARER				DATE																											
TX0108999863																																															
Facility Name/C104-40																																															
Cook Composites and Polymers																																															
Mailing Address/C106-30																																															
City/C107-25												ST/C108-2				Zip/C109-5				County/C114-3																											
Facility Contact Person/C105-30																																															
RICHARD HORGER																																															
Location Address/C110-30																																															
City/C111-25												ST/C112-2				Zip/C112-5				SI Dist/C115-2																											
Owner's Name/C1503-40																																															
GLN				IRN				ISO				UTC				C1105				C1305				Other				Other				Telephone/C113-10															
Waste Codes to be added/C2701																								Waste Codes to be deleted/C2701																							
Process Codes- Add - Delete - Change																																															
C1801-3				C1802-13												C1803-1				C1804-1																											
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Other Coding as necessary																																															

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Entered by: dat Date Entered: 6/10/94 QC: File Code:

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2334 Holmes Road
Houston, TX 77051
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Headquarters
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January 18, 1994

Texas Natural Resource Conservation Commission
Waste Evaluation Section
Industrial and Hazardous Waste Division
P. O. Box 13087
Austin, TX 78711-3087

Dear Sirs:

Attached is the 1993 Annual Waste Summary for the Houston Plant of Cook Composites & Polymers at 2434 Holmes Road, Houston, Texas 77051. I also need you to change the contact person to Richard Horger for this operation.

Yours truly,

Richard Horger
Richard Horger
Safety & Environmental Manager

RH/r

Attachments

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ACKNOWLEDGEMENT OF NOTIFICATION
OF REGULATED WASTE ACTIVITY
(VERIFICATION)

This is to acknowledge that you have filed a Notification of Regulated Waste Activity for the installation located at the address shown in the box below to comply with Section 3010 of the Resource Conservation and Recovery Act (RCRA). Your EPA Identification Number for that installation appears in the box below. The EPA Identification Number must be included on all shipping manifests for transporting hazardous wastes; on all Annual Reports that generators of hazardous waste, and owners and operators of hazardous waste treatment, storage and disposal facilities must file with EPA; on all applications for a Federal Hazardous Waste Permit; and other hazardous waste management reports and documents required under Subtitle C of RCRA.

EPA ID NUMBER

TX0108999863

INSTALLATION ADDRESS

COOK COMPOSITES & POLYMERS
2434 HOLMES RD
HOUSTON, TX 77051
RICHARD HORGER MGR

2434 HOLMES RD
HOUSTON, TX 77051

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RCRA RECORD CENTER

Cover Sheet

EPA I.D. #	Facility Name	Where to file	Section Code	Date	Signature
TXD 108999863	Cook Composites & Polymers	II	6H-P-1	11/9/92	SB

0485

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AUG 22 1991

Cook Composites & Polymers
 Attn: Bob Finden, Plant Manager
 2434 Holmes Rd.
 Houston, Texas 77051

Re: Visual Site Inspection
 Cook Composites & Polymers
 EPA ID No. TX0108999863

Dear Mr. Finden:

The purpose of this letter is to introduce the Planning Research Corp. (PRC) as a contractor to the United States Environmental Protection Agency (EPA) Region 6. Pursuant to the authority of Section 3007 of the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. 1927, this contractor has been duly designated by the U.S. EPA to conduct a visual site inspection as part of the RCRA Facility Assessment (RFA). An RFA is required for facilities that manage hazardous waste. The objective of this evaluation is to determine whether there have been, or are likely to be, releases of hazardous waste or hazardous constituents at the facility which will require further investigation. This analysis will provide information to establish priorities for a subsequent RCRA Facility Investigation, if needed.

An integral part of the RFA is a visual site inspection to verify and determine the location of "Solid Waste Management Units" (SWMUs). The term SWMU includes "any unit at the facility from which hazardous constituents might migrate, irrespective of whether the units were intended for the management of solid and/or hazardous wastes" (50 FR 28702, July 15, 1985). This definition includes container storage units; tanks; surface impoundments; waste piles; land treatment units; landfills; incinerators; underground injection wells; physical, chemical and biological treatment units; recycling units; and areas contaminated by routine and systematic discharges from process areas.

We will visit your facility for the purpose of inspecting these SWMUs. This inspection is to enable EPA to attain a technical understanding of current and historical waste flows. Photographs of each SWMU are to be taken to document conditions at the facility and the waste management procedures.

6H-PC:VCammack:8/21/91x6780

SYMBOL		CONCURRENCES					
SURNAME	King	6H-PC	6H-PC				
DATE	8/21/91	Neleigh					

EPA Form 1320-1 (12-70)

OFFICIAL FILE COPY
 U.S.GPO:1988-0-208-471

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PRC may require the assistance of some of your personnel in reviewing solid waste flows, associated units, and any other solid waste management information. The enclosure to this letter includes a partial list of items which EPA will consider during the site inspection to clarify and supplement previously submitted information. Additional issues may be reviewed at the time of the site inspection.

The visual site inspection is scheduled for August 29, 1991. Phillip Winsborough and Mark Guarisco are PRC's representatives presently scheduled for the inspection. If you have any further questions, please contact Van Cammack at (214) 655-6790.

Sincerely yours,

William K. Honker, P. E.
Chief
RCRA Permits Branch

Enclosure

cc: Dan Eden, TWC

Phillip Winsborough, PRC

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RCRA FACILITY ASSESSMENT VISUAL SITE INSPECTION
MAGNA CORPORATION and CHARDONOL CORPORATION
HOUSTON, TEXAS

EPA ID NOs. TXD000807875 and TXD¹⁰8999863

For use in preparation for the visual site inspection (VSI) to be conducted at the Magna Corporation facility in Houston, Texas, on August 29, 1991, you will find the enclosed list of potential solid waste management units (SWMU) to be inspected by NUS.

The purpose of the VSI is to (1) identify SWMUs, (2) assess the potential for release of hazardous constituents from SWMUs and other areas of concern, and (3) evaluate the need for further action.

PRC conducted a review of file materials at the Environmental Protection Agency (EPA) Region 6 and at the Texas Water Commission (TWC) before developing the enclosed attachments. The file review included Resource Conservation and Recovery Act (RCRA) documents; Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) documents; and general correspondence. The principal sources of information used for this preliminary list were the RCRA Part A and Part B Permit Applications and subsequent revisions. Compliance Evaluation Inspections were also relied upon to identify potential SWMUs.

The inspection team will need to see the potential SWMUs identified in Attachment A during the site visit. Because the list of SWMUs is based upon a review of file information which may not be complete, Magna Corporation should address the prepared request for general information (Attachment B), supplemental information (Attachment C), and a fact sheet for each SWMU as shown in Attachment D before the site investigation. The team will revise the list of SWMUs based on your responses and the site inspection. Your cooperation and assistance in compiling this information will expedite the inspection process.

Members of the inspection team will be as follows:

- NUS - Phillip Winsborough
- NUS - Mark Guarisco

If you have any questions, please contact Robert Melton or Ken Goodman of PRC (214-754-8765), or Barry Millman or Lata Venkateshwara of NUS (301-258-6000).

ATTACHMENT A
MAGNA CORPORATION and CHARDONOL CORPORATION
HOUSTON, TEXAS
POTENTIAL SOLID WASTE MANAGEMENT UNITS (SWMUs)

SWMU Number	Identification of Potential SWMUs
1*	Wastewater Impoundment*
2*	Black Tar Area South of Impoundment*
3	Wastewater Collection Sump
4	Skimmed Oil Storage Tanks
5	Wastewater Holding Tanks (3)
6	Treatment (Flocculation) Pits (7)
7	Sludge Dewatering Belt Press
8	Drum Storage Areas (3)
9	WWTF Piping Chemical Sewer Conduits
10	WWTF Enclosed Steel Storage Tanks (2)
11	Tank Storage Area(s)
12	Loading Docks
13	Tank Farms (are these product or waste tanks?)
14	Miscellaneous Wastes at Laboratories
15	Miscellaneous Wastes at Maintenance Shop

In addition, the following manufacturing equipment must be inspected to verify that its operation does not generate or otherwise manage solid wastes:

- Autoclave (oxyalkylation) Units 2A and 2C
- Ester Kettle Unit 1B
- Glass Lined Unit
- Acrylic Acid Polymerization Unit

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- Finished Compound Blending Unit
 - Pilot Unit
 - Tank Car Railsiding/Loading/Unloading Unit
 - Tank Truck Loading/Unloading Unit
 - Ancillary Process Equipment (Pipes, Lines, Etc.)
-

* - This unit is still under ownership of Magna Corporation. Units without asterisks are under ownership of Chardonol Corporation.

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ATTACHMENT B

**MAGNA CORPORATION and CHARDONOL CORPORATION
HOUSTON, TEXAS**

**REQUEST FOR ADDITIONAL FACILITY INFORMATION
BEFORE THE VISUAL SITE INSPECTION**

Please review your files and provide answers to the following information requests or questions before the VSI scheduled for August 29, 1991.

QUESTIONS

1. Provide a current, to-scale facility map, and locate all listed potential solid waste management units and areas of concern. Do not reduce the map on a photocopier as doing so may destroy the scale.
2. Provide current drawings showing the (1) engineering design and associated secondary containment of facility areas, and (2) equipment used to handle or dispose of hazardous and nonhazardous wastes.
3. Identify and describe all containers, handling, treatment, and all storage areas for bulk product, raw materials and waste media.
4. Provide a list of current federal and state permits (including permit no. and expiration dates) associated with the Magna Corporation facility. Identify the permitted units, and provide operating status information on each one.
5. If current and historical aerial photos of the facility exist, please make them available for review during the site visit.
6. Provide information concerning any on-site spills or leaks which have occurred at the facility (liquid, solid, or vapor phases). This should include any equipment and areas used to handle raw materials, products, and waste media.
7. Do the secondary containment units have drains? If so, where do they drain?
8. Provide an accurate record of the SWMUs listed and potential SWMUs that are not listed. Specifically, indicate the initial and final dates of service.
9. Are any new facility units now under construction or planned for construction in the immediate future? If yes, will these new units handle wastes or have the potential to produce wastes? Provide supporting documentation, if applicable.
- 10a. Provide detailed information about the present function of Magna Corporation. What does Magna presently manufacture? What wastes - hazardous or nonhazardous - are currently generated? What quantities are currently generated? Also, provide process flowsheets for the currently active units.
- 10b. Provide detailed information about the present function of Chardonol Corporation. What does Chardonol presently manufacture? What wastes - hazardous or nonhazardous - are currently generated? What quantities are currently generated? Also, provide process flowsheets for the currently active units.

11. Are there any maintenance or service areas? If so, please show their location on a map and indicate how wastes from these areas are disposed of.
12. Are there any underground storage tanks, landfills, or impoundments on Magna Corporation property? If so, locate on a current map, and explain their status and function.
13. Where is wastewater discharged? If it is discharged to a publicly owned treatment works, is it pretreated?
14. Are there any air emissions in the manufacturing process?
15. Are there any satellite accumulation points, such as maintenance areas where solvents or paints are used? If so, locate on a map and describe the activities and the wastes generated.
16. If available, please provide a history of past activities at the site before Magna Corporation began operations.
17. Provide a topographic map of the site, including detail of surface drainage. Include runoff to adjacent properties.
18. Provide any information regarding ground-water and surface water monitoring. Especially, provide ground-water monitoring data for the three wells installed near the closed surface impoundment.
19. Provide any information regarding soil sampling and analyses performed at the facility.
20. Provide a yearly summary of the quantities and types of waste disposed of at the facility during the last 5 years.
21. Provide details of any remedial activities undertaken at the site.
22. Provide approved closure plans and closure reports for the closed units at the facility.
23. Provide a copy of the report prepared for Magna Corporation by Groundwater Technology, Inc. on November 17, 1981, regarding the potential for migration of hazardous waste constituents from the surface impoundment (storage pond) to water supply wells and surface water.
24. Provide a to-scale copy of the groundwater contour map of the site and the site plan that were prepared by Resource Engineering, Inc. for Magna Corporation on August 7, 1984.

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ATTACHMENT C
MAGNA CORPORATION and CHARDONOL CORPORATION
HOUSTON, TEXAS

RFA SUPPLEMENTAL INFORMATION

Facility General Information

1. The facility name and identification number.
2. The facility's address, county located in, and latitude and longitude.
3. The primary business the facility is engaged in.
4. The year facility operations began.
5. The size of hazardous waste sites at the facility.
6. The commercial status of the facility. Does it accept any waste from off-site?
7. Have any public complaints been filed against the facility? Please list the complaints chronologically and explain their nature.
8. Has the facility undergone any enforcement actions from regulatory agencies?
9. What environmental permits (RCRA, NPDES, etc.) has the facility applied for and which have been received?
10. What is the total number of SWMUs and AOCs at the facility?
11. What is the total number of RCRA Land Disposal Units at the facility?

Facility-Specific Information

1. What is the net annual precipitation?
2. What is the depth to the uppermost aquifer?
3. Describe the geologic material above the aquifer (hydraulic conductivity in cm/sec, etc.).
4. What are the ground water and surface water uses in the area (drinking, fishery, agriculture, and commercial/industry)?
5. Identify the SWMU types at the facility (surface impoundment, landfill, tank, etc.).
6. What is the quantity of waste generated at the facility?
7. List any reported releases of wastes, the media the wastes were released to (groundwater, surface water, air, and on-site) and the volume of wastes released.
8. List the contaminants detected in wastes generated at site and the methods used to analyze the wastes.
9. What is the flood frequency for the area?

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10. Describe, in detail, containment methods used for solid waste management units (i.e. liner, covers, run-on/run-off controls, etc.).
11. Describe the upgradient drainage area.
12. What is the predominant land use within the drainage area and use of the land surrounding the facility?
13. How accessible are the SWMU areas to the general population?
14. What is the distance to the nearest active drinking water well?
15. What is the distance to the nearest surface water discharge? To what water body does the nearest surface water discharge to?
16. What is the distance to the nearest surface water body or contact point?
17. What is the off-site population within the 1- and 3-mile radii?
18. List any sensitive environments within the 1- and 3-mile radii (habitat, endangered species, wetland, etc.)?
19. What is the distance to the nearest sensitive environment of an off-site population?

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ATTACHMENT D
MAGNA CORPORATION and CHARDONOL CORPORATION
HOUSTON, TEXAS
POTENTIAL SOLID WASTE MANAGEMENT UNITS (SWMUs)

Number: (SWMU No.)

Name: (Identification of SWMU)

Unit Characteristics: (General description, including location, dimensions, SWMU components, construction material, and secondary containment)

Operational History: (Dates of operation and any operational permits or permit applications)

Current Status: (Active, inactive, physically closed, approved closed, or certified closed)

Waste Characteristics: (Description of types, volumes, and hazardous or nonhazardous characteristics of waste media)

Waste Management: (Description of handling, treatment, storage, and disposal practices; include names and addresses of disposal facilities used)

Release History: (Visual evidence or reports of releases of hazardous material; include associated dates and any regulatory actions performed)

Potential Pathways: (Potential migration pathways, such as air, surface water, ground water, soil, or subsurface gas)

Exposure Potential: (Location and use of nearby water wells, surface water, and other potential human and environmental receptors of releases)

Remedial Action: (Description of any remedial action performed because of past releases; include dates and types of remediation performed, and waste media disposition)

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RCRA RECORD CENTER

Cover Sheet

EPA I.D. #	Facility Name	Where to file	Your code	Date	Signature
TXD108999863	Wm. S. A.	W. S. A.		11/6/91	B. Valera

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MAGNA/CHARDONOL/
COOK COMPOSITES AND POLYMERS
RCRA FACILITY ASSESSMENT REPORT
(TXD000807875 AND TXD108999863)

Prepared for:

U.S. Environmental Protection Agency
Region 6
Allied Bank Tower, 12th Floor
1445 Ross Avenue
Dallas, Texas 75202

Prepared by:

PRC Environmental Management Inc.
350 North St. Paul Street
Suite 2500
Dallas, Texas 75201

and

HALLIBURTON NUS Environmental Corporation
910 Clopper Road
Gaithersburg, Maryland 20877-0962

EPA Contract No. 68-W9-0041

Work Assignment No. R262210

October 7, 1991

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DISCLAIMER

This report was prepared for the U.S. Environmental Protection Agency, Region VI (EPA) by PRC Environmental Management, Inc., in fulfillment of Contract No. 68-W9-0041, Work Assignment No. R26822-10. The opinions, findings, and conclusions expressed herein are those of the contractor and not necessarily those of the EPA or other cooperating agencies. Mention of company or product names is not to be considered an endorsement by the EPA.

This document is intended to assist EPA and State personnel in exercising the discretion conferred by regulation in developing requirements for an owner/operator to conduct the RCRA Facility Investigation (RFI) pursuant to 40 CFR 264. EPA will not necessarily limit RFI or other requirements to those that correspond with the recommendations set forth herein. EPA and State personnel must exercise their technical judgment in using the RCRA Facility Assessment report as well as other relevant information in determining what RFI or other requirements to include in a permit or an order.

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EXECUTIVE SUMMARY

A RCRA Facility Assessment (RFA) was performed at the Magna/Chardonol, Houston Manufacturing Plant/Cook Composites and Polymers, Chardonol Division (CC&P) facility, previously Magna Corporation (Magna), a Division of Baker Performance Chemicals, Inc. in Houston, Texas. The purpose of the RFA was to identify and assess the potential for release of hazardous wastes or hazardous constituents from solid waste management units (SWMUs), active and inactive, and other areas of concern (AOCs), as well as to evaluate the needs for further actions. This RFA report incorporates the results of a file review of materials available from EPA Region VI, the Texas Water Commission (TWC), and the visual site inspection (VSI), performed on August 29, 1991.

CC&P owns one 19.35 acre tract within the city limits of Houston. This area includes land around the Magna Chemical closed Wastewater Impoundment (SWMU #1) and the main production facility. Magna Chemicals kept the 1.1996 acres of property immediately surrounding the impoundment for the purpose of complying with Federal RCRA and TWC closure requirements.

The CC&P is located at the site of Magna/Chardonol chemical formulation plant and consists mostly of buildings and tanks, and a closed surface impoundment. Production at these buildings began in the 1950s. This property has had several prior owners. These owners and the approximate date of their ownership, in chronological order are: Atlas Powder (1950 to 1961), Aquaness (1961 to 1970), Milchem Incorporated (1970 to 1972), Magna Corporation (1972 to 1983), Chardonol (1983 to 1990).

Primary operations currently conducted at the facility include manufacturing and compounding of specialty chemicals, some of which are different from those produced by Magna and Chardonol. Main operations include chemical processing, alkylation and polymerization facilities.

All of the process operations occur within the main production facility. The main process units include the autoclave units building, the ester kettle units, compound blending unit, and the glass lined unit building. The plant currently employs 32 people.

The VSI was conducted on August 29, 1991. The inspection team consisted of representatives from HALLIBURTON NUS Environmental Corporation (working under subcontract to PRC-EMI), and CC&P. The inspection team toured the facility and identified 31 SWMUs and one AOC. Eight of these SWMUs were within the manufacturing building, and majority of the remaining SWMUs were at the facility's wastewater treatment systems and waste storage areas. The AOC identified during the VSI includes tank truck loading and unloading area.

Several units inspected during the VSI appear to warrant further RCRA facility investigation and/or sampling. The purpose of sampling would be to determine if hazardous wastes or hazardous constituents are being released to the environment. These include the Wastewater Impoundment (SWMU #1), Black Tar Area (SWMU #2), Treatment Pits (SWMU #3), Metal Catch Trays at Tank Car Railside (SWMU #22), Old Bone Yard (SWMU #24), and Sewer Effluent Sump at Treatment Pits (SWMU #29).

1.0 INTRODUCTION

This section of the RFA report covers the purpose and scope of the RFA program. The contents of the other sections of this report are also described.

1.1 Purpose of the RCRA Facility Assessment

The 1984 Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA) provide new authority for EPA to require comprehensive corrective actions for releases of hazardous waste and hazardous constituents from solid waste management units (SWMUs) at facilities subject to the permitting requirements of RCRA Section 3005(e) and at facilities applying for RCRA permits. This authority requires EPA to address the need for corrective action for previously unregulated releases to air, surface water, soil, and groundwater, and to address the generation of subsurface gas. Section 3004(u) allows EPA to require corrective actions after permit issuance through a schedule of compliance. In order to determine the necessary permit conditions, EPA Regions conduct a RCRA Facility Assessment (RFA) at each facility. The RFA, which consists of a Preliminary Review (PR), a Visual Site Inspection (VSI), and, if appropriate, a Sampling Visit (SV), provides the basis for further investigations to be conducted after permit issuance.

The central purpose of an RFA is to identify releases or potential releases requiring further investigation. According to EPA's RFA Guidance Document, the four purposes of a RFA are as follows:

1. To identify and gather information on releases at RCRA-regulated facilities;
2. To evaluate solid waste management units and other areas of concern for releases to all media and regulated units for releases to media, other than groundwater;
3. To make preliminary determinations regarding releases of concern and the need for further actions and interim measures at the facility; and
4. To screen from further investigation those SWMUs which do not pose a threat to human health and the environment.

1.2 Procedures

This report represents an evaluation of SWMUs and areas of concern at the Magna/Chardonol/Cook Composites and Polymers (CC&P)

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facility and, as such, summarizes the result of a review of the file materials available from EPA Region VI and Texas Water Commission (TWC), and the VSI performed at the facility. The file materials were obtained during a search of relevant files at the EPA Regional Office in Dallas, Texas, in August, 1991, and at the TWC office in Austin, Texas, in August, 1991. File materials reviewed encompassed documents relevant to the RCRA, CERCLA and NPDES programs. Information collected during the file review was used to assemble a potential SWMU list and a general list of questions to CC&P representatives at the facility prior to the VSI.

The VSI was conducted by HALLIBURTON NUS at Magna/Chardonol/Cook Composites and Polymers (CC&P) facility in Houston, Texas on August 29, 1991 and was used to verify file information and observe current conditions of the SWMUs. The HALLIBURTON NUS representatives present for the duration of the inspection activities were Mr. Philip Winsborough, Mr. Mark Guarisco, and Mr. Larry Basilio. The CC&P representatives were Mr. Robert Finden and Mr. Charles Earhart.

Section 2.0 of this report contains a description of the Magna/Chardonol/CC&P facility, including its historical and current operations. Individual SWMUs are also identified in Section 2.0, along with a summary description of wastes managed by the facility. Section 3.0 provides an overview of the facility's environmental setting, comprising meteorology and climate, surface water, hydrogeology, and receptor information. Section 4.0 contains detailed discussions of each SWMU. Section 5.0 covers other areas of concern (i.e., releases from spills or evidence of contamination of unknown origin). Section 6.0 consists of a broad assessment of release pathways, covering the potential for releases to soil, groundwater, surface water, and air. Section 7.0 provides conclusions and recommendations, and Section 8.0 provides a list of references to the report. The Summary VSI Trip Report and Photographs and the Solid Waste Management Unit and Areas of Concern Location Map are presented as Appendices A and B, respectively, to this report.

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2.0 FACILITY DESCRIPTION

This section of the RFA report describes the location of the Magna/Chardonol/Cook Composites and Polymers Facility (CC&P) and its historical and current operations, provides a list of the identified SWMUs and AOCs, and describes the sources and types of wastes managed at the facility.

2.1 Site Location

The CC&P Facility is located in southeastern Texas within Harris County and in the southeast section of the corporate limits of Houston, as shown in Exhibit 2-1. The facility is a part of Cook Composites and Polymers, Chardonol Division, which is headquartered in Kansas City, Missouri (Ref. 35). The facility was formerly known as Magna Chemicals and as the Chardonol Corporation Houston Manufacturing Plant. The present company, Cook Composites and Polymers, is a 50 percent ownership by Cook Paint and Varnish and Total Chemie (a French Company). The facility is located at 29°40'10" North latitude and 95°33'30" West longitude (Ref. 15). The address of the facility is 2434 Holmes Road, Houston, Texas 77051. The facility location is shown in Exhibit 2-2.

CC&P owns one 19.35 acre tract within the city limits of Houston. This area includes land around the Magna closed Wastewater Impoundment (SWMU #1) and the main production facility. Following the sale to CC&P, Magna Chemicals kept the 1.1996 acres of property immediately surrounding the impoundment for the purpose of closure (Ref. 7).

2.2 Historical and Current Operations

The CC&P is located at the site of Magna Corporation/Chardonol chemical formulation plant and consists mostly of buildings and tanks, and a closed surface impoundment. Production at these buildings began in the 1950s. This property has had several prior owners. These owners and the approximate date of their ownership, in chronological order are Atlas Powder (1950 to 1961), Aquaness (1961 to 1970), Milchem Incorporated (1970 to 1972), Magna Corporation (1972 to 1983), Chardonol (1983 to 1990) (Ref. 35).

The operations of the plant prior to Magna's ownership are not known. It is known that construction of the plant by Atlas Powder was initiated in the 1950s and production began in the early 1960s. Prior to Chardonol purchasing the facility in December, 1983, Magna operated the facility as a batch chemical manufacturing facility, producing organic specialty chemicals for the oil field production enhancement, and in various refinery processing operations. These chemicals consisted of intermediates for and blends of corrosion inhibitors, emulsion breakers, surfactants and water treating

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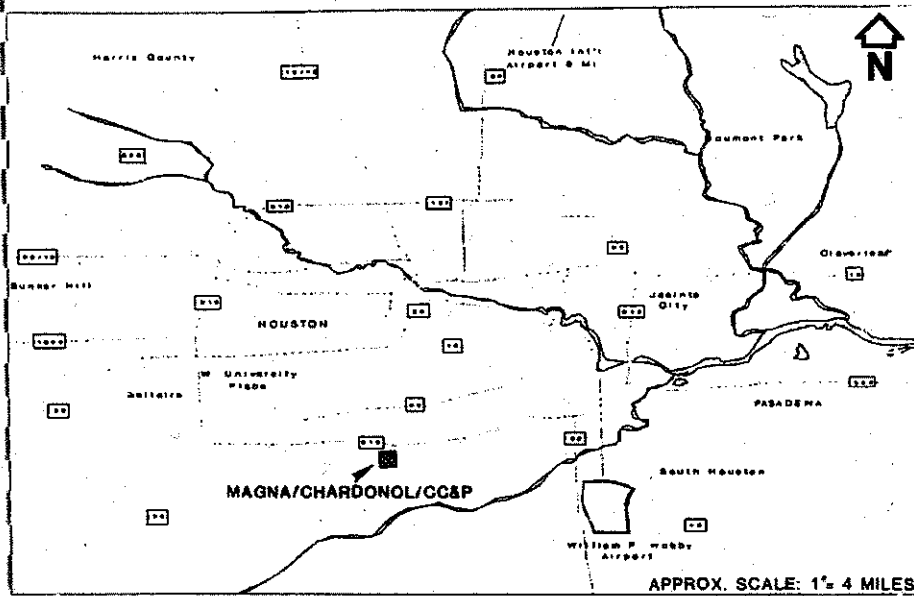
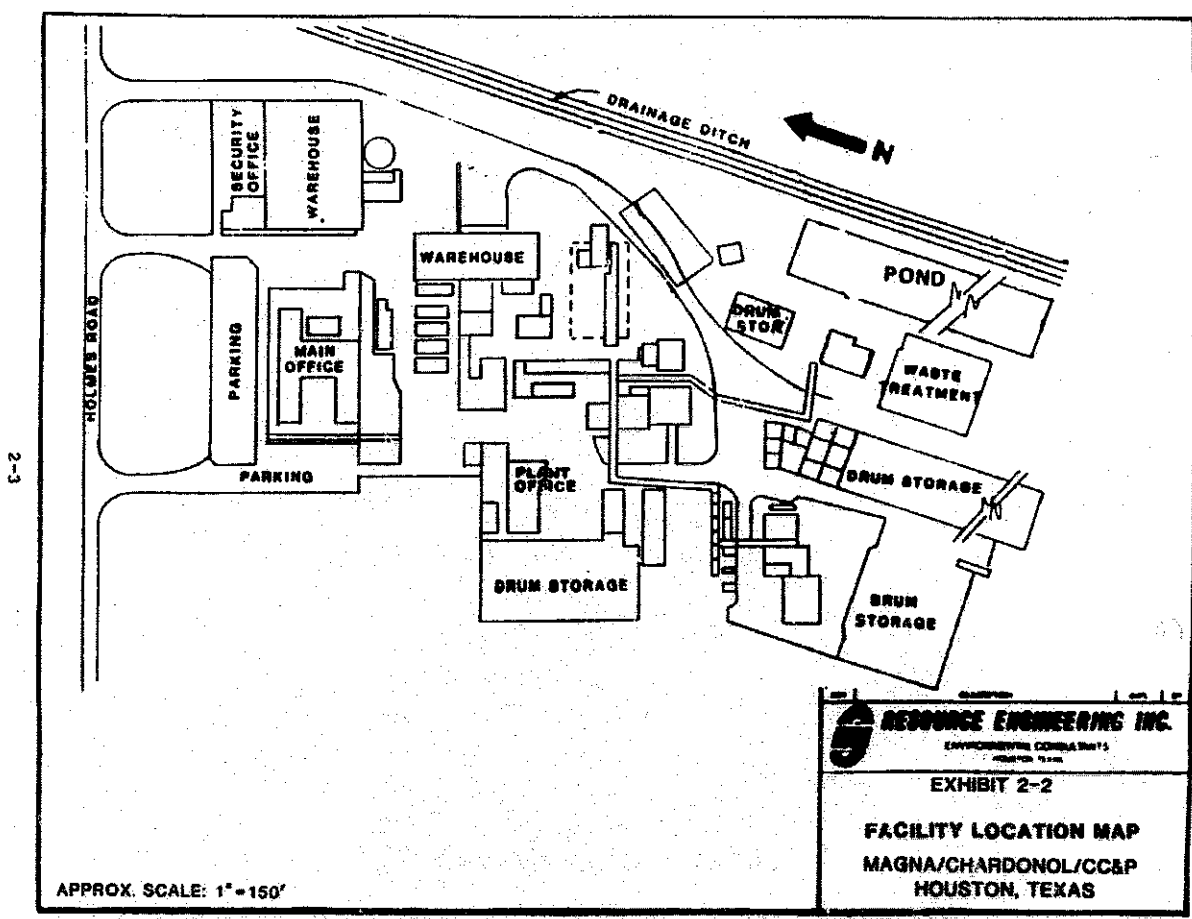


EXHIBIT 2-1
SITE LOCATION MAP
MAGNA/CHARDONOL/CC&P
HOUSTON, TEXAS

HALLIBURTON NUS
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chemicals for various applications associated with the production of petroleum (Ref. 4). Primary operations today at the facility include manufacturing and compounding of specialty chemicals, some of which are different from those produced by Magna and Chardonol. Main operations include chemical processing, and alkylation and polymerization facilities. The acrylic unit, which was a continuous operating polymerization unit utilizing acrylic acid as the monomer is no longer being used (Ref. 35).

Magna Corporation kept the property surrounding and including the closed Wastewater Impoundment (SWMU #1) in order to complete closure. This impoundment was used from 1961 until January, 1983, when it was placed in inactive status by re-routing piping and covering the sludges that remained in the bottom of the basin with an impervious cover to minimize exposure to rainfall. In July 1984 removal of the sludges was initiated and the unit was closed in February 1985 (Ref. 3).

All of the process operations occur within the main production facility. The main process units include the autoclave units, the ester kettle units, compound blending unit, and the glass lined unit (Ref. 35).

2.3 Summary of Wastes Handled

Magna/Chardonol/CC&P generates and stores non-hazardous and hazardous wastes for less than 90 days prior to on-site recycling or shipping off-site for disposal.

The Magna/Chardonol/CC&P facility has a wastewater treatment facility (WWTF) on-site. This wastewater treatment facility has had several changes over the years. Wastewater from the manufacturing process is first sent to the Wastewater Collection Sump (SWMU #3), after which the skimmed oil is sent to the Skimmed Oil Storage Tank (SWMU #4), where it is stored. Oils were temporarily stored in this tank prior to off-site disposal. In 1981, the skimmer was removed and the Skimmed Oil Storage Tank (SWMU #4) was no longer used because there was a change in the process; diesel fuels were no longer used as a solvent in the process. The wastewater was discharged to the Wastewater Impoundment (SWMU #1). After 1983 the unit discharged wastewater to WWTF Enclosed Steel Storage Tanks #1 and #2 (SWMUs #11 and #12) by above-ground piping, which exits from the top of the sump (Ref. 36).

The Wastewater Impoundment (SWMU #1) (prior to 1983) and the WWTF Enclosed Steel Storage Tanks #1 and #2 (SWMUs #11 and #12) (after 1983) discharged the wastewater to the Treatment Pits (SWMU #8). This unit is used to pretreat wastewater by flocculation and precipitation prior to the wastewater being discharged to the POTW under City of Houston Permit No. 20684. The sludges generated are picked up by the Sludge Dewatering Belt Press (SWMU #9). After

the water is removed from the sludge, a mostly dry non-hazardous sludge is produced. This sludge is then collected in a WWTF Sludge Hopper (SWMU #23) and then sent off-site for disposal. Prior to 1982, the sludges were drummed in the Old Drum Storage Area at WWTF (SWMU #5) and then sent off-site. The sludge effluent is routed back to the Treatment Pits (SWMU #8) (Ref. 35).

As stated earlier, Magna retained ownership of the Wastewater Impoundment (SWMU #1) and was responsible for closing it. In June of 1984 Magna was able to successfully reclassify the Wastewater Impoundment (SWMU #1) sludges from Class I to Class II industrial solid waste. However, the reclassification did not apply to the Wastewater Impoundment (SWMU #1), which itself remained a Class I hazardous waste management unit. Magna was required to clean close the unit. The unit was closed in 1985. During closure, approximately 200 five thousand gallon tank trucks of fluid sludge were removed from the unit and taken for off-site disposal (Ref. 3). The Wastewater Impoundment (SWMU #1) was cleaned to background (less than 50 ppb) for xylene, toluene and mercury (Ref. 3). The unit was filled with compacted clay, graded for drainage, and capped and seeded (Ref. 3). However, TWC has not received a certification of clean closure for the unit from a registered certified professional engineer. In addition, Texas Water Commission (TWC) as a result of a comprehensive groundwater monitoring evaluation in 1987, determined that the monitoring wells were not adequately located in the true hydraulic gradient of the unit, and, therefore may not detect the edge and center of the plume where significant concentrations of the contaminants may be present (Ref. 20).

During closure of the Wastewater Impoundment (SWMU #1), Black Tar Area (SWMU #2) just south of the impoundment was uncovered. Black tar-like material had been placed in this area. This material was also removed during the closure of the surface impoundment (Ref. 20).

CC&P generates and stores non-hazardous and hazardous wastes. Both hazardous and non-hazardous wastes are shipped off-site for final disposal or reclamation. Currently, and for the past year, CC&P has been recycling wastes back into the process to utilize the glycols and other alcohols and solvents, and by rinsing containers and product vessels and reusing the solvents. Also recent operational changes have reduced the volume of several wastes generated so that they are no longer produced (Ref. 35).

The sources of wastes generated at the facility were associated with manufacturing and compounding chemicals, separating oil from wastewater, collecting sludges from the waste treatment plant, off-spec chemicals, laboratory glass and chemicals, solid waste (trash), solid and liquid copper waste, Calnox 9944, and maintenance of facility pumps (Ref. 4). Wastes generated on-site generally can be grouped into non-hazardous trash, wastewaters,

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sludges from the Treatment Pits (SWMU #8), liquid hazardous wastes, and liquid (Texas Class 1) non-hazardous wastes (Ref. 35).

Non-hazardous trash is generated at several units at the facility and is collected in open and covered metal dumpsters and stored until it can be disposed of off-site. The trash is disposed of in a BFI solid waste landfill (Ref. 35).

Liquid hazardous wastes (solvents, corrosives) are containerized in 55-gallon drums and stored at designated locations around the facility in hazardous waste drum storage areas until they can be collected and transported off-site (Ref. 35).

The Magna/Chardonol/CC&P production plant generates solid waste, including recyclable materials (e.g., off-spec chemicals). The plant also generates hazardous wastes, primarily the oily layer from the plant wastewater, liquid chemicals from the plant, phenolic resins and other chemicals from blocked drainage or sumps, drum residues, and off-spec chemicals as wastes, which are received at the main production area hazardous waste storage facility. Other areas also have the potential to generate waste (e.g., laboratory building and Maintenance Shop), which would be transported to the drum storage areas or tanks for shipment off-site. CC&P has generator status and a separate EPA identification number for Magna, although CC&P and Magna had the same ID number until 1985.

2.4 Identification of Solid Waste Management Units

As a result of this RCRA Facility Assessment, a total of 31 solid waste management units (SWMUs) and one area of concern have been identified at Magna/Chardonol/CC&P during the preliminary review and VSI. The definition of a SWMU adopted in the RFA reflects current EPA policy as stated in the July 15, 1985 Codification Rule (50 FR 28701), the RCRA Facility Assessment Guidance Document (October 1986), and other recent policy directives from the Office of Solid Waste and Emergency Response (OSWER). The Agency currently defines a SWMU as any discernable unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. This definition includes areas at a facility at which solid wastes have been routinely and systematically released. This definition specifically excludes accidental spill events that are not routine or systematic and units that manage materials that are not wastes. Recycled metal operations and storage areas were included in the definition of a SWMU due to known or suspected contamination by hydraulic oils, coolants or other materials. Based on this definition, the list of SWMUs identified at Magna/Chardonol/CC&P is presented below. In addition to these SWMUs, one area of concern (AOC), the Truck Loading/Unloading Areas, were identified during the VSI. Photographs of the SWMUs are presented in Appendix A. Appendix B includes maps which show the locations of the SWMUs.

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SWMU No.	Name of Solid Waste Management Unit	RCRA Permitted SWMU	Status
1	Wastewater Impoundment	Yes*	Closed
2	Black Tar Area	No	Closed**
3	Wastewater Collection Sump	No	Active
4	Skimmed Oil Storage Tank	No	Inactive
5	Old Drum Storage Area at WWTF	No	Inactive
6	Dumpster for Filter Press Cake	No	Active
7	Wastewater Holding Tank	No	Active
8	Treatment Pits	No	Active
9	Sludge Dewatering Belt Press	No	Active
10	WWTF Piping/Chemical Sewer Conduits	No	Active
11	WWTF Enclosed Tank #1	No	Active
12	WWTF Enclosed Tank #2	No	Active
13	T-1011 Storage Tank	No	Active
14	Waste Storage Area in Laboratory	No	Active
15	Waste Storage Area in Maintenance Shop	No	Active
16	Container Storage Outside Maintenance Shop	No	Active
17	Tote Bins at Autoclave Units	No	Active
18	Tote Bins at Ester Kettle Unit IB	No	Active
19	Waste Storage Area at Glass Lined Unit	No	Active
20	Dumpsters at Glass Lined Unit	No	Active
21	Tote Bins at Finished Compound Blending Unit	No	Active
22	Metal Catch Trays at Tank Car Railsides	No	Active
23	WWTF Sludge Hopper	No	Active
24	Old Bone Yard	No	Closed
25	Drum Staging Area #1	No	Active
26	Drum Storage Area	No	Active
27	Drum Staging Area #2	No	Active
28	Sewer Effluent Sump	No	Active
29	Sewer Effluent Sump at Treatment Pits	No	Active

30	Container Storage Outside Laboratory	No	Active
31	Container Storage Outside Process Areas	No	Active

- * Closure and Post Closure under RCRA 40 CFR 264.
- ** Not closed under RCRA authority.

In addition to these SWMUs, the following area of concern was identified based on the PR and/or the VSI. Appendix B presents the location of the area of concern. Exhibit 2-3 is a tabulated description of the various SWMUs at the facility.

AOC No.	Name of Area of Concern
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1	Tank Truck and Unloading Area
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EXHIBIT 2-3

SWMU SUMMARY
Sheet 1 of 8

	SWMU No. 1	SWMU No. 2	SWMU No. 3	SWMU No. 4
Name	Wastewater Impoundment	Black Tar Area	Wastewater Collection Sump	Skimmed Oil Storage Tank
Description	Compacted clay lined carbon pit after closure	Black tarry material	Two adjacent concrete cells (each 6'x6'x4')	Above-ground vertical 4000-gallon steel tank on legs
Operating Status	Closed	Closed	Active	Inactive
Waste Type	Wastewater and sludges	Tarry material	Oily wastewater	Skimmed oil
Waste Management	Storage of wastewater and sludges	Unknown	Oil separated historically by belt skimmer with wastewater being sent to Treatment Pits (SWMU #8)	Temporary storage of waste oils prior to off-site disposal
Release History	Confirmed groundwater and soil contamination	Confirmed soil contamination in the past	No release	No releases
Release Pathway Media	Soil/groundwater	N/A	N/A	N/A
Remedial Action	Removed 2/85	N/A	N/A	N/A
Release Potential	+++ Soil/groundwater ++ Surface water ++ Air o Subsurface gas	+ Soil + Groundwater + Surface water + Air o Subsurface gas	+	+
Potential Pathway Media	All	All	All	All
Reason for Release Potential Rating*	Nature of operations, type of waste, shallow water table and a lack of data	Contact with soil, nature of operations, unit design & location	Type of waste (oils and volatiles), unit design and location	Unit design and location
Need for RFI**	Yes	Yes	No	No
Media for Further Investigation	Soil/groundwater	Soil/groundwater	N/A	N/A

Notes:

- * Release Potential Rating: o = No potential for release
- + = Low potential for release
- ++ = Moderate potential for release
- +++ = High potential for release

** Although these "Yes" ratings indicate further investigation is required, their release potential is specifically indicated in the "Reason for Release Potential Rating" column. For each SWMU requiring an RFI, the number indicates the priority.

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EXHIBIT 2-3

SWMU SUMMARY
Sheet 2 of 8

	SWMU No. 5	SWMU No. 6	SWMU No. 7	SWMU No. 8
Name	Old Drum Storage Area at WWTF	Dumpster for Filter Press Cake	Wastewater Holding Tank	Treatment Pits
Description	Container storage area	20 cubic yard dumpster	6000-gallon steel tank	Seven concrete rectangular pits (each 80' x 12' x 4')
Operating Status	Inactive	Active	Active	Active
Waste Type	Dried sludge	Dried filter press cake from glass lined unit process	Process wastewater	Non-hazardous sludges
Waste Management	Dewatered sludge from Treatment Pits (SWMU #5) collected in drums	Containment of dried filter press cake	Above ground tank used to manage process wastewater	Precipitation and flocculation
Release History	No releases	No releases	No releases	No releases
Release Pathway Media	N/A	N/A	N/A	N/A
Remedial Action	N/A	N/A	N/A	N/A
Release Potential	+	+	+	+ Soil/groundwater + Surface water ++ Air + Subsurface gas
Potential Pathway Media	All	All	All	All
Reason for Release Potential Rating	Nature of waste, unit on concrete pad	Nature of waste, unit on concrete pad	Nature of waste, closed tank, unit located on concrete pad	Nature of waste, open press area, location on concrete pad
Need for RFI	No	No	No	Yes
Media for Further Investigation	N/A	N/A	N/A	Air

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EXHIBIT 2-3

SWMU SUMMARY
Sheet 3 of 8

	SWMU No. 9	SWMU No. 10	SWMU No. 11	SWMU No. 12
Name	Sludge Dewatering Belt Press	WWTF Piping/Chemical Sewer Conduits	WWTF Enclosed Tank #1	WWTF Enclosed Tank #2
Description	Belt press machine located over one of the Treatment Pits (SWMU #9)	Concrete troughs and lined piping	250,000-gallon enclosed steel tank surrounded by an earthen dike	250,000-gallon enclosed steel tank surrounded by an earthen dike
Operating Status	Active	Active	Active	Active
Waste Type	Non-hazardous sludge	Spilled products	Untreated process wastewater	Untreated process wastewater
Waste Management	Sludge dewatering	Collection and discharge to WWTF	Wastewater storage prior to treatment in WWTF	Wastewater storage prior to treatment in WWTF
Release History	No releases	No releases	No releases	No releases
Release Pathway Media	N/A	N/A	N/A	N/A
Remedial Action	N/A	N/A	N/A	N/A
Release Potential	+	+	+	+
Potential Pathway Media	All	All	All	All
Reason for Release Potential Rating	Nature of waste, location in concrete pad	Nature of waste, unit design	Enclosed, diked steel tank	Enclosed, diked steel tank
Need for RFI	No	No	No	No
Media for Further Investigation	N/A	N/A	N/A	N/A

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EXHIBIT 2-3

SWMU SUMMARY
Sheet 4 of 8

	SWMU No. 13	SWMU No. 14	SWMU No. 15	SWMU No. 16
Name	T-1011 Storage Tank	Waste Storage Area in Laboratory	Waste Storage Area in Maintenance Shop	Container Storage Outside Maintenance Shop
Description	8700-gallon wastewater tank	Waste containers ranging in size from 5-gallon to 55-gallons	Wastes stored in drums and tote bins	Wastes stored in drums and tote bins
Operating Status	Active	Active	Active	Active
Waste Type	Process wastewater	Waste products from process QA/QC tests	Used oil and cleaning chemicals	Used oil and cleaning chemicals
Waste Management	Stores process wastewater from production area	Waste stored in small containers at lab	Oil and chemicals stored in drums and tote bins on a concrete floor	Oil and chemicals stored in drums and tote bins on a concrete floor
Release History	No releases	No releases	No releases	No releases
Release Pathway Media	N/A	N/A	N/A	N/A
Remedial Action	N/A	N/A	N/A	N/A
Release Potential	+	+	+	+
Potential Pathway Media	All	All	All	All
Reason for Release Potential Rating	Located on concrete flooring and oiled	Inside building, wastes stored on concrete floor	Inside building with concrete floor	Waste containers stored on pallets and in bins, unit located on a concrete pad
Need for RFI	No	No	No	No
Media for Further Investigation	N/A	N/A	N/A	N/A

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EXHIBIT 2-3

SWMU SUMMARY
Sheet 5 of 8

	SWMU No. 17	SWMU No. 18	SWMU No. 19	SWMU No. 20
Name	Tox Bins at Autoclave Units	Tox Gas at Ester Kettle Unit 1B	Waste Storage Area at Glass Lined Unit	Dumpsters at Glass Lined Unit
Description	Enclosed metal bins	Enclosed metal bins	Wastes from glass lined unit	Open topped dumpsters
Operating Status	Active	Active	Active	Active
Waste Type	Process waste	Process waste	Process chemicals and waste products	Non-hazardous filter press cake
Waste Management	Management of process wastes resulting from operation of autoclave units	Management of process wastes resulting from operation of ester kettle	Waste stored in carboys and tote bins	Cake temporarily managed in open topped dumpsters
Release History	No releases	No releases	No releases	No releases
Release Pathway Media	N/A	N/A	N/A	N/A
Remedial Action	N/A	N/A	N/A	N/A
Release Potential	+	+	+	+
Potential Pathway Media	All	All	All	All
Reasons for Release Potential Rating	Construction of bins, concrete flooring in building, drains to WWTP	Construction of bins, concrete flooring in building, drains to WWTP	Construction of containers, concrete floor in building	Nature of waste, design of unit, unit located on concrete floor
Need for RFI	No	No	No	No
Media for Further Investigation	N/A	N/A	N/A	N/A

EXHIBIT 2-3

SWMU SUMMARY
Sheet 6 of 8

	SWMU No. 21	SWMU No. 22	SWMU No. 23	SWMU No. 24
Name	Tate Bin at Finished Compound Blending Unit	Metal Catch Trays at Tank Car Railside	WWTF Sludge Hopper	Old Bone Yard
Description	Enclosed metal bins	Rail siding with metal catch trays between rails and above ties and concrete troughs	20 cubic yard dumpster on concrete pad	Landfill for disposal of plant non-hazardous trash and crushed drums
Operating Status	Active	Active	Active	Closed 1980
Waste Type	Process wastes	Spilled product and/or raw materials	Dried sludge	Non-hazardous trash and crushed drums from plant
Waste Management	Process wastes managed in tote bins	Receives drippage during loading	Temporary storage of dried sludge in an open topped dumpster	Landfill
Release History	No releases	No releases	No releases	No releases
Release Pathway Media	N/A	N/A	N/A	N/A
Remedial Action	N/A	N/A	N/A	Removed all materials in 1980
Release Potential	+	+ + Soil/groundwater + Surface water + Air o Subsurface gas	+	+ Soil + + Groundwater + Surface water + Air o Subsurface gas
Potential Pathway Media	All	All	All	All
Reason for Release Potential Rating	Unit design, location inside structure	Open topped area, catch basin on ground in concrete	Construction of container, location on concrete surface	Unit no longer exists, removed in 1980, area now under concrete slab
Need for RFI	No	Yes	No	Yes
Media for Further Investigation	N/A	Soil	N/A	Soil, groundwater

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EXHIBIT 2-3

SWMU SUMMARY
Sheet 7 of 8

	SWMU No. 25	SWMU No. 26	SWMU No. 27	SWMU No. 28
Name	Drum Staging Area #1	Drum Storage Area	Drum Staging Area #2	Sewer Effluent Sump
Description	20'x50' outdoor drum staging area with concrete floor	80'x65' outdoor drum staging area with concrete floor	135'x200' outdoor drum staging area with concrete floor	In ground concrete sump with pump for discharging treated wastewater
Operating Status	Active	Active	Active	Active
Waste Type	Drummed waste	Drummed products, lab waste, recyclable materials	Non-hazardous sludges and liquids	Treated wastewater
Waste Management	Temporary drum storage	Temporary storage	Temporary storage	Discharges wastewater to a Houston POTW
Release History	No releases	No releases	No releases	No releases
Release Pathway Media	N/A	N/A	N/A	N/A
Remedial Action	N/A	N/A	N/A	N/A
Release Potential	+	+	+	+
Potential Pathway Media	All	All	All	All
Reason for Release Potential Rating	Uncurbed concrete area near fence line	Curbed concrete floor	Location on concrete flooring	Type of waste discharged
Need for RFI	No	No	No	No
Media for Further Investigation	N/A	N/A	N/A	N/A

EXHIBIT 2-3

SWMU SUMMARY
Sheet 8 of 8

	SWMU No. 29	SWMU No. 30	SWMU No. 31
Name	Sewer Effluent Pump at Treatment Pits	Container Storage Outside Laboratory	Container Storage Outside Process Areas
Description	In ground concrete pump for discharging wastewater to POTW via SWMU #28	Waste containers	20'x20' container storage area
Operating Status	Active	Active	Active
Waste Type	Pre-treated wastewater	Lab wastes	Process wastes
Waste Management	Discharges wastewater to a POTW	Management of lab wastes	Temporary storage prior to off-site disposal
Release History	Overflow in 9/21/80 due to sticking valve	No releases	No releases
Release Pathway Media	Soil/surface water	N/A	N/A
Remedial Action	N/A	N/A	N/A
Release Potential	+ Soil ++ Groundwater + Surface water + Air o Subsurface gas	+	+
Potential Pathway Media	All	All	All
Reason for Release Potential Rating	Unit design, nature of waste	Container of drums, location on concrete floor	Construction of containers, design of unit
Need for RFI	Yes	No	No
Media for Further Investigation	Soil	N/A	N/A

3.0 ENVIRONMENTAL SETTING

This section of the RFA report covers meteorology, surface water characteristics, geology and soil characteristics, groundwater quality, and receptor information.

3.1 Land Use

The Magna/Chardonol/CC&P facility is located in the 19.35 acre Industrial Park, an industrial and warehouse complex in Houston, Texas. CC&P is located in the former location of Magna Corporation, which manufactured oil field chemicals. The area was originally designed as a chemical manufacturing plant. Chardonol and subsequently CC&P uses the original facilities for the manufacture of oil field chemicals and polymers, and for storage of solid and hazardous wastes.

The surrounding area is predominantly industrial and commercial, with some residential, and is located in a section of southeast Houston (Ref. 20). A small percentage of the land is used for cropland and pasture land. Urban population centers include the City of Houston and the incorporated towns of Bellaire, and West University Place, two miles to the northwest. Large population centers are located throughout the area. Houston has a population of about 1,800,000. The site is one mile south and east of Astroworld and the Astrodome, and seven miles west of Hobby Airport. The adjoining land use includes a pipe supplier, a laydown yard, a producing oil field, and a bulk oil/gasoline terminal (Ref. 35).

3.2 Climate

The climate at the CC&P site in southeastern Texas is characterized by a mean annual temperature of 70°F, with a mean annual relative humidity of about 75 percent. Mean January temperatures range from 44°F to 64°F, while the mean July temperatures vary from 74°F to 92°F. The growing season averages 309 days. The prevailing wind direction is to the northwest at an annual mean speed of 10 miles per hour (Ref. 17).

Average annual precipitation for the area is 46 inches. The months with the highest precipitation are May, with approximately 5.0 inches, and July, with approximately 4.8 inches. The mean annual total snowfall is less than 1 inch per year. Snow is a rare occurrence (Ref. 17).

3.3 Topography and Surface Water

Houston is within the West Gulf Coastal Plain physiographic province. The topography is characterized by a relatively flat surface with only moderate dissection by streams and raised

elevations of 5 to 85 feet above sea level. Houston is located within the Coastal Prairie and Marsh Zone. Regionally, the land slopes gulfward at 1.65 ft/mile. The average surface topographic elevation at this site is 55 feet above mean sea level (Refs. 18 and 20).

The area around the CC&P site is characterized by numerous small drainage ditches eventually draining to Sims Bayou, which drains to Buffalo Bayou (the Houston Ship Channel) and to Galveston Bay. The CC&P site runoff flows to a ditch then to Sims Bayou of the San Jacinto River Basin. Sims Bayou is classified as a Gulf Coastal mid-size watershed fishery (Ref. 18). The facility is not located within a 100-year flood plain (Ref. 14). Also, none of the immediate areas surrounding the facility are classified as wetlands (Ref. 18).

3.4 Soils, Geology, and Groundwater

Soils. The surficial soils at the CC&P site are described by the USDA Soil Conservation Service as Urban Land. Urban Land soils are soils that are altered, disturbed soils that are built up by industrial uses. Usually, these areas are extensively built up, where 75 to 100 percent of the mapped area is either covered by structure or disturbed by cutting, filling or grading. The soils making up Urban Land have been so altered and obscured that they cannot be properly classified (Ref. 31). The soil consists of silty clay, sandy clay and clay loams. It is estimated that the permeability of the soils is between 0.06 and 4 inches per hour (Ref. 20).

Regional Geology. Houston is located in Harris County in southeastern Texas. CC&P is located approximately 5 miles southeast of downtown Houston. Harris County lies in the Gulf Coast Physiographic Province of Texas. Surficial deposits are represented by the Beaumont Formation. The Beaumont Formation was deposited in the latter part of the Pleistocene Epoch. Deposits of the Beaumont Formation are primarily ancient delta and delta plain deposits. Within the Beaumont Formation, lesser amounts of chenier and lagoonal deposits are present. Sediments of the Beaumont Formation are dominated by clays and muds, or deposits of clayey sands and silts. The physical properties of the clays and muds differ from the clayey sands and silts. Generally, the clays and muds exhibit lower permeabilities, higher water holding capacity, and poor drainage, whereas the clayey sands and silts are of moderate permeability, moderate water holding capacity, and moderate drainage (Refs. 21 and 22).

Shallow soil borings conducted at the site indicate a silty clay being present below the site. Silty to sandy seams are generally present within this clay, and it is these features which are screened in the monitor wells for the Wastewater Impoundment (SWMU #1) (Ref. 20).

Groundwater. Harris County lies within the San Jacinto River Basin. Aquifers utilized on a regional basis are the Evangeline and the Chicot aquifers. Underlying the Evangeline Aquifer is the Burkvilleville confining unit, which is of Miocene Age. No groundwater in the Houston area appears to be obtained from units underlying the Burkvilleville confining unit.

Regionally, the Evangeline Aquifer is equivalent to the Goliad Formation of Pliocene age. The Evangeline Aquifer is typically wedgeshaped and has a high sand to clay ratio. The top of the aquifer is approximately 1000 feet deep and the thickness averages 2000 feet. The Evangeline is noted for its abundance of good quality water and is considered one of the most prolific aquifers in the Texas Coastal Plain. Recharge of the Evangeline Aquifer probably occurs where Pleistocene deposits overlie the Goliad Formation. Water percolating down through the Pleistocene formations would enter directly into the Goliad Formation at its upper limit. The Chicot Aquifer consists of sand units of all of the Pleistocene formations present. The lithology is primarily of sand and clay, but because of the mode of deposition of these formations, the stratigraphy does not lend itself to a simple definition. No wide spread confining layers overlie the Chicot and the fact that this aquifer extends to the surface where the Beaumont Formation crops out, suggests that the Chicot is under water table conditions. Recharge for the Chicot Aquifer is probably from direct infiltration from the ground surface. The recharge area includes all fluvial channel sand units within the area paralleling the Gulf Coast where Pleistocene formations crop out (Ref. 22, 23, and 25).

The uppermost aquifer that underlies the CC&P site is an unnamed and unconfined aquifer. The facility is not located on a recharge area of a major/minor aquifer. The aquifer has a hydraulic conductivity in the range of 1×10^{-7} to 1×10^{-4} cm per second. And an effective porosity of 0.1 to 0.25 (Ref. 20).

Three groundwater monitor wells are located at the site in the vicinity of Wastewater Impoundment (SWMU #1). The screened interval for the wells ranges from 10 to 17 feet below grade. The water table at the CC&P site is very shallow. It is approximately 5 feet below the ground surface. The thickness ranges from 1.5 feet to 5.0 feet (Ref. 20). The groundwater flow direction appears to be to the southeast. There appears to be a 12 foot-thick continuous aquitard beneath the unit. Flow rate and depths to deeper aquifers could not be determined due to the lack of site specific data. Also, based on the results of the 1987 Comprehensive Monitoring Evaluation, it could not be determined if there is a hydraulic connection between the uppermost aquifer with deeper zones. Two groundwater wells are located on adjacent property. No information is available on the depths or screened intervals of these wells (Ref. 20).

3.5 Receptor Information

There are currently 32 employees at the CC&P facility. The facility is located in an industrial area. There are no residents within the facility boundary.

The CC&P site runoff flows to an unnamed County drainage ditch which flows south to Sims Bayou and from there ultimately to Galveston Bay. As stated previously, the groundwater flow in the area of the facility appears to be towards the southeast. The prevailing wind direction is to the northwest at an annual mean speed of 10 miles per hour with seasonal patterns. Generally, the wind in the area is from the southeast in the summer and from the north in the winter (Ref. 17).